

The 50 MHz DX Bulletin

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Issue #2

The 50 MHz DX Bulletin was founded by Harry Schools KA3B. It is dedicated to the understanding and utilization of long distance propagation in the 6-meter Amateur band. This issue, edited and published by Victor Frank, K6FV, is the fifth "fill-in" issue and was actually written in September 1993. Subscription rates are \$20 U.S. third class mail, \$25 U.S./Canada/Mexico airmail, \$25 by surface or \$30 airmail elsewhere for 12 issues. Circulation matters and DX reports should be sent to 12450 Skyline Blvd., Woodside, CA 94062-4541 USA. If you can reach the Internet, my address there is frank@marie.sri.com The Bulletin may be freely quoted, provided that credit is given.

Subscription Renewals

Having filled 1992, it is time to start collecting subscription payments from those of you whose subscriptions ended during 1992. Your payment for 12 issues will allow me to bump your expiration date ahead one year and eventually we'll be able to feed the current month into our mailing list program. Your subscription expiration date is on line 1 of your mailing label; EXP 9212 means your last paid issue was December 1992.

Errata

1992 December issue, page 1, second paragraph:
From the NC7K Report, not NC7X.

Perseids 1993: Fireballs but No Storm

Continuing our coverage of the 1993 Perseids shower from the two previous issues, it appears that we may have been a bit too pessimistic. *Sky & Telescope* October 1993 reports that "One of the best meteor showers in years struck the Earth on the night of August 11-12. Nevertheless, the Perseids confounded astronomers and disappointed millions of eager viewers by producing no 'meteor storm' for any part of the world."

Sky & Telescope estimated that the Perseids shower was about three to five times richer than average at its peak. Moreover, observers around the world were treated to an unusually high number of very bright meteors.

On July 11, from 1400-1900 UT, observers in Japan reported normal or even below-normal rates, though with an enhanced fraction of bright meteors. The Earth was due to cross the orbit plane of the parent comet Swift-Tuttle at 0115 UT on July 12. About an hour earlier, observers in Europe reported rates increasing, with meteors coming much faster at 0330 UT as the sky started to lighten. At this time the zenithal hourly rate was tentatively estimated at 300-400. (The zenithal hourly rate, or ZHR, is the number of meteors that would be seen by a single experienced observer if the naked-eye limiting magnitude were 6.5 and the radiant were at the zenith.)

Observers across the USA reported seeing typically 60-110 per hour under conditions that probably translated to a ZHR of a couple hundred or so, tapering slowly by 1100 UT, dawn on the west coast USA. Observers in Hawaii reported it still going well at 1300 UT, and later in Japan. In fact, an observer reported 60 Perseids per hour in a dark sky over New Mexico from 0900-1100 the following day (August 13). He reported that by then most

of the meteors were faint, as in a normal shower.

Sky & Telescope even holds out hope for coming years. Researchers at Queen Mary and Westfield College, London) predicted that the best Perseids shower will come in 1994, when the Earth will cross the comet's orbit plane around 0700 UT August 12. Using a different (more accurate?) orbit, Brian Marsden (Central Bureau for Astronomical Telegrams) predicts the best Perseids shower coming as late as 1995 or even 1997.

How the Perseids affected VHF was reported by Tim, NC7K in September 1993 *West Coast VHFer*:

"Early in the month [of August] I spent many hours on either the phone or 3.818 MHz setting up skeds for the Perseids meteor shower. Packing the truck alone took six hours. This year, like last, I will operate from DM09 atop 8100' Pond Peak. Fortunately my employer is fairly understanding and has allowed me the 11th and 12th off. The FT-620B I purchased from N6RPM arrived two days before my departure. It came in very handy predicting meteor propagation on 144 MHz. Several beacons on 50 MHz worked well for this. I would tune one in, squelch the 6 m rig and when the beacon came screaming through, I called on 2 meters.

No storm of any kind was detected here in Northern Nevada. The meteors seemed to be arriving in clumps. Every 20-30 minutes, 2 m would be treated to a 60 second or more burn with very little in between.

August 11th at 0730, W0RRY in EM26 was my first sked. We completed after 35 minutes on a 30 second burn. Afterwards I found WB7Q on 80 m and agreed to run just for yucks having two skeds already set up for later. Being first and third, I start the sked. Upon unkeying, I hear "NC7K WB7Q S2 Break", "Roger S2 Roger S2 Break". I answer, "Roger 73 Thanks Over" and this goes on for over 60 seconds! We never did find the end of that burn as we quit talking first. Not finding anyone else to run with, I curl up and go to sleep with all the gear on. Around 1400, I'm jarred awake by a two minute burst on which I heard 15 stations in eight states. By the time I untangle myself and get to the microphone, it's over but **Boy am I awake!** At 1500 I work my first random—W0KEA in DM69. At 1718, I complete with K1II in DN84, and at 1855 with VE6BPR in DO32. Every sked so far has ended with at least a 30 second burn!

On August 12 at 0315 I complete with W7XU portable in DN15. That's 400 miles on meteors, way short of the normal minimum range one would expect. Around this time 6 m was cooking with double-hop Es into the southern states. My next sked is set up via 6 m Es with KD0DW in DN70. We complete with a ten second burn at 0422. At 0700 I begin running with San, K5YY in EM36—Arkansas. This 1433 mile contact took 62 minutes to complete! In that period I heard 1) his call, 2) my call, and 3) a "Roger S2". Over 80 meters he confirms hearing my "Rogers".

It was a lot of work, but well worth it! Around 0907 on random, I work W0ETT—DM79 and NJ7A—DN30 with the latter via backscatter. After three years of trying, I finally work Dave backscatter meteors of all things!

Starting around 1404 on the 12th, things really begin to pick up. Sixty to ninety second burns start to arrive closer together. I hear many stations over the next hour, most of whom I have already worked. N6RMJ is copied backscatter many times. The one new station I've heard eludes me until 1627 when WA0TKJ in EM18 acknowledges my "DM09". Suddenly around 1705, as if someone threw a switch, it becomes very quiet with only two 20 second bursts in the next two hours. At 1806, I complete with KD0HE in EN00 for state #19 on 144 MHz. No long burns now, only 2-3 second burns every minute or two. Around 1930, 56 contacts and ten new grids worked, I begin to pack up and head home.

Here are some of the results I've gathered from 3.818 or the phone how others out west fared...

K6AAW	8 New grids	170 now worked
NC7K	10 New grids	110 now worked
N0XX	24 New grids	46 now worked
WB9AJZ	12 New grids	57 now worked
VE7KDB	2 New grids	30 now worked
KE7NS	12 New grids	119 now worked
WB6WLR	6 New grids	50 now worked
AJ6T	7 New grids	72 now worked
N6RMJ	10 New grids	114 now worked
K7IEY	2 New grids	65 now worked

I place the radio peak between 1530 and 1630 on the 12th. I understand the Europeans got a burst maybe an hour long around 0100 the 12th. One report over Internet has a group of LZ op's working over 200 QSOs in over 50 grids. WB9AJZ worked four stations random off the same rock! Rumor has it Shep, W7HAH on August 11th worked a VE1 on 144 MHz via AU..."

Further on in the same issue of *West Coast VHFer* is a report from Larry, WB5KYK, who reported no completions on paths over 1200 miles in length, but lots of 2 m contacts at shorter distance, including KS0F, EM48; KE9QT, EN44; WB4MVF, EL94; N0JHZ, EM53; KB4CSE, EM44; and KD4LT, EM81; and on 70 cm he completed with KD2RDO in FN12.

Letters to the Editor

Hello Vic: from L.L.Filby, K1LPS Sept 15, 1993

The previous mailing included the November '92 issue with K6STI's article on his 23' 5 element 6m beam. That arrived right at the time when I had 7 elements assembled on a 24' boom—and adaptation of a design by WB3GBU from August 1984 *Ham Radio*. Days before I was to put the newly rebuilt beam up—that issue arrived and caused me to change plans mid-stream. This beam has a long history. It started out life as a 10 element Cushcraft. In the late 70s it was

converted to a 6 element NBS, on the same 24' boom using the original CC gamma match.

Two elements were removed—and the WB3GBU was quickly converted to the 5 element K6STI. It's been up about a month now—but there have been no openings since it was put back up. It certainly seems to exhibit the pattern predicted. I also took Brian up on the special offer for the YOSIX program—and have had a great deal of fun playing with that. The only original pieces on this new beam are 48 inch sections cut from the elements of the original beam—and the boom. The match was rebuilt as a "T" with a 1/2 wave balun. I did have some difficulty in achieving a match—but that is too long a story to get into here. Since putting the beam up, I have had considerable discussion with several antenna designers, all of whom indicated that such beam designs—with fewer elements on a longer boom—had a tendency to exhibit VSWR problems under icing and in close proximity to other conductive masses. Indeed, this antenna is the first one on the mast, and is quite close to several wire antennas. I did find that the VSWR changed greatly over the full 360 degree rotation. Sometimes very low, and in some places as much as 1.6:1.

I just finished the September contest weekend—which was no test for the antenna—as this is not the time for 6m openings around here. So, I will leave it as is for the time being. Trying the 7 element design would be a fairly simple half day project—and I may try that in time.

I have nothing to report in the way of 6m DX. I have been too busy to catch much in the way of openings this year. I did work OX3LX on June 12, and that was the first new DX I've worked on 6m in about a year. And—speaking of that contact—I need to go back through some issues and see if I can find QSL routing info for some of my holdouts. I've never been able to get QSLs out of several FY contacts, no card out of PZ1AP, and no cards from LU2DEK, ON4AMX, CX4HS, and OX3LX yet. I'd always done pretty well at getting cards over the years, but lately it's become more difficult. My count stands at 77/71. I hope things will really be hopping in the next F2 cycle so that I can finish off my 6m DXCC. I have made some good DX contacts in June in recent years, and I do have an 8877 amp nearly finished.

Anyway, I enjoy reading the bulletin. I like to see technical articles such as the antenna article in the November '92 issue by K6STI. That little article really summed up antenna design issues very nicely. I never bought Brian's YO program—but after my experience with this YOSIX, I may buy the full blown version. My only disappointment with YOSIX was the failure to meet my hopes for designing matching systems, such as the "T". But, I'm told that none of these antenna modeling programs do a great job in that area, and the documentation does point out that there are too many variables to guarantee results in that function. Still—the program serves a very useful function.

Anyway, after 12 years, the old CC 10 element has been recycled yet again. This time with 100% stainless hardware. Whether it ends up being left at the current 5 element configuration or reshuffled to the 7 element lineup, this antenna is destined to serve at least another 12 years. I think this one is around 24 years old already.

L.L. Filby, K1LPS, RFD #2 - Box 125, St. Johnsbury, VT 05819

Dear Victor, from Mike Cherry, VE7SKA 930905

Thanks for the info on QSLing XE1ABA—I may try the technique of sending a Christmas card during the holiday season and tucking in a QSL card and IRC. I've had zero luck getting cards from Mexicans—no doubt due to postal pilferage. Thank God I've worked the odd DX-pedition by K9VV and W9DHK with verification.

Sorry I never included the exact frequency for K6FV/b, but on the three or four occasions it was in, I never measured it. I twice intended to, but impatience got the best of me during the "pause" in the transmission of your beacon, and I QSYed up to the 'working' portion of the band. I don't think you should QSY up a few Hertz. Your beacon is quite distinctive from W7US/b also KK4M/7 in Las Vegas. If the duty cycle will allow it, I would suggest tightening up the gap in the text—too often I and others locally aren't sure if K6FV/b is in. (I guess I'm not the only impatient local!) Ed—The message size is fixed, I can increase the duty cycle by slowing it down.

Before my "end-of-season" report, I should state that my interpretation of 'ducting-type' openings is consistent with the tilted-cloud theory. I believe that the signal indeed does get trapped between sporadic-E clouds at slightly different heights within the appropriate portion of the E-layer. However, what I can't resolve in my mind is whether an actual duct of ionized material helps shoot the signal along, parallel to the earth, waiting for the appropriate hole to downlink the signal back to earth (similar to a tropo wave-guide or tube) or whether the E-layer is littered with sporadic-E clouds at various heights and tilt angles that keep ping-ponging the signal until a down-link cloud reflects the signal back to earth.

There has been much speculation by N16E, ZL4AAA, and others that 6 meter antipodal-path and long-path F-layer propagation may be due to a strong ionized layer ducting the signal. I suggest such a similar situation takes place at the correct height in the E-layer. Naturally, because of the lower height of the layer and thus lower angle of critical signal reflection, the distances are shorter than they would be in the F-layer.

Before I was licensed as a ham, I was an avid 6 meter SWL since 1978; I have DXed TV and FM broadcast since the late sixties. As Mel Wilson suggested in his excellent 2-part essay in "Beyond Line of Sight" there are numerous different types of Es propagation. I believe that ducting-type Es and classic double-hop are entirely different. Many times on 6 meters and low-band TV, both the first hop and second hop are easily

detectable (also FM—interestingly though I have never detected duct-type or tilted cloud openings on 88-108 MHz. Neither has Pat Dyer, WA5IYX*, who is probably the world's record-holder of FM loggings at over 1000 stations.) During duct-type openings on TV channels 2,3,4 there is no sign of stations that should be logged within the so-called first hop distance. Those of us living here on the west coast such as VE7FEI, myself, you guys down in CM87,88 and the guys down in southern California (and likewise East coast 6 meter ops.) are situated perfectly to study these kinds of openings when beaming inland. This preceding summer along with 1987, 1977 and 1976 has had more long-haul and double-hop than any other, since my observations began in the late sixties!!

* Interpreted, possibly incorrectly from one of Pat's articles on Es. I am unsure.

Here's a report on Northwest Pacific 50 MHz activity as of July 14, when my last report ended:

July 14: CN87,88,89 had a ducting-type Es opening into Pennsylvania, New York, and Virginia 1547-1625 UTC (All dates/times in the bulletin are UTC unless noted otherwise.) VE3 from 1625-1645, back to New England & Maryland from 1700-1900. Six opened again at 1930 to Utah and Colorado, then shifted south to New Mexico until 2100.

July 15: 0215-0400 was open into southern California.

July 17: 1755-1826 there was a duct-type opening into FM18 and FN31. The MUF around 2300 went to the FM band and up to 2 meters. A few locals worked into the Palm Springs area of southern California on 2m. In the FM band, Palm Springs was in, and the opening shifted south to Mexicali for about 20 minutes before abruptly dropping out.

July 22: A couple "30 second special" openings; first at 0240 a few lucky W7/VE7s worked into Utah, then at 0255 into southern California (DM06,04,13).

July 24: The first Es opening of the season from CN87,88, & 89 to Alaska. NL7OW and AL7C were reported in here at 2150. Readers may find of interest that we in Northern/Central CA worked KL7 June 6, 17, 18, and 23, often with the VE5US beacon in at the same time, but apparently skipping over W7/southern VE7.

July 27: Six opened around 0005 briefly from W7/VE7 to VE4. Around 0300, TV channels 3 & 4 from west-central Texas were in for about 10 minutes with CATV-grade signals, but nothing was heard on 6 meters. From 0350-0420, NL7OW was in here 20/9 with no other Alaskans in. Shortly after 0400, I heard K7ICW in DM26 (off the back of the beam) work NL7OW during the brief double-hopper (we were the stations in the first hop to both the NL7 and Las Vegas operators!).

July 28: At 0145, a few of us lucky W7/VE7s had a brief opening to VE4CP in EO00—a rare grid.

July 29: W5FF was in briefly around 0100. EM32 was heard in a 30-sec. special around 0210 with one Seattle-area station making a contact. The Colorado area was in 0350-0430. There was a rare late night/early morning Es opening to east and central Montana from 0720-0840. No 6 meter operators were on the air, but TV channel 2 from Billings, MT and Channel 4 from Butte were 20/9 during this opening.

August 6: 1620-1645, we had a brief 6 meter opening to southern California.

August 11: The Perseids were exciting this year—the probable peak for me was from 1600-1900. VE7FEI and I worked stations in DN44, DM06, DN02, DN10, & DM69. I'm unsure of the time, but N7AVK down in CN83 apparently worked XE1J sometime that day via Es.

August 12: The Perseids gave us VE5 and W6 (CM87, CM88, CM98), N0LL, and a few Colorado stations.

August 13: Meteors gave us a few W6s.

August 16: We had an aurora from 2200-0400 into the usual VE6, W7 (CN87,97,96). Although no auroral-Es was noted locally, VE7FEI reports that Shep, W7HAH worked a VE1 via this mode!

August 17: 0130 began with an Es duct-type opening to Louisiana, then Texas (EM00). From 0130-0210 a couple of W7s in the Portland, Oregon area worked an XE1 (call unknown). Six closed for an hour, then opened again around 0300 to Colorado, Utah, and southern Oregon!!!!, by 0400, it had shifted to central, then southern California. EM00 was in again at 0325—this time via double-hop, with Colorado (DM78,79) also worked around the same time (first hop Es). This appears to be the final Es opening of the season locally.

September 3: we had a weak aurora from 0320 when W7HAH was heard on SSB. CW was required to work him. The opening strengthened and VE7ASQ in DN09 was worked. Either very few stations were active on meters or the opening was very selective. VE7FEI reports auroral Es from 0625-0730 when the VE5US beacon was in 20/9 as were TV channels 3 from Winnipeg, and channel 4 from Brandon, Manitoba. Unfortunately no 6 meter operators were on (or awake!)

<September 5: We have had some tropo on 6 meters during the past week, allowing us to work into the Portland, Oregon area (CN84,85).

One of the addresses you were looking for: Rudy Stam, VE7FEI, RR#2, S-27A4, Ganges, B.C., V0S 1E0 Canada. Like myself (and every other resident on Salt Spring Island) our address and postal codes will change sometime next year.

Glen Tate, VE7HCE has been QRT up until this last week. He has moved and I do not have his new address and his phone number is unlisted. Glen has moved to CN99 and is the **only** six meter operator in that grid which is extremely rare and has only been activated by a few rovers groups such as VE7BEE, et. al. Glen has just put up his 6 element 50 MHz beam and spoke with VE7FEI last night. Glen says he is once again QRV (from CN99) and is ready for W5FF, W5OZI, and a few other grid champions that badly need CN99. Glen does **not** have CW skills, but is a sharp DXer nonetheless. Rudy told him that you were needing his address and Rudy passed yours on to Glen. It seems that Glen sent a renewal cheque to Shel, NI6E, and has not had an issue of the Bulletin since. I assume Glen is about to write to you. Ed—He did, and I shipped him all the issues that had been returned from the post office this year. His new address is Glen Tate, VE7HCE, PO Box 481, Sardis, B.C., V2R 1A8, Canada.

If anything **really** earth-shattering happens, I now have your phone number. Mine is (604)537-5201 and there is **no** answering machine on. I hate to foil DXers calling to inform me of an opening that is current only to be greeted by an answering machine. Believe me, it especially makes overseas VHFers reluctant to call!

Mike Cherry, VE7SKA, Box 631, Ganges, B.C. V0S 1E0 Canada.

Dear Victor, from Emil Pocock, W3EP 93 Sept 23

I am glad to see you doing such a great job with the bulletin, especially as reports must be getting thinner. Your inclusion of ionospheric sounding graphs was most interesting, although it was hard to figure out what the various symbols meant, if anything. Anyway, what really caught my eye was that the data were available over Internet. Can you tell me the Internet address and how to get this sort of data? Do you need some sort of password or special means in?

Emil Pocock, W3EP, The World Above 50 MHz, Box 100, Lebanon, CT 06249 (203)642-4347.

Pardon my not mentioning the symbols on the graphs of foF2 vs time in our 1992 December issue. I used one symbol for each day, only July has 31 days and my plotting program has only 14 symbols. Also the data points are given to one decimal place, and thus some overlap.

The purpose of plotting every day on one plot is, of course, to show the day-to-day variability. It is the monthly median conditions that are predicted by most propagation programs. Some will also give you upper and lower deciles; e.g., frequencies will be lower than x on all but three days of the month or higher than y on all but three days of the month, respectively.

A wealth of solar, geomagnetic, and ionospheric data is available by ftp from xi.uleth.ca.

In the example script below, text in courier font indented 2" is what you type in. Starting at your home computer prompt, type:

ftp xi.uleth.ca

You will be greeted by a login message, which I disregard, and type in the standard Unix anonymous login and password:

Password user anonymous
guest

The prompt you receive is <xi.uleth.ca>. You may wish to look around to see what is available by typing:

dir

The first directory you want is called pub. You get into that directory by typing:

cd pub

Again you will probably want to see what subdirectories are in pub, so type:

dir

Most, if not all of what you want is in subdirectory solar, and so you type:

cd solar

Another dir command:

dir
leads you to the following list in single file (but printed here in 3 columns):

1991	1992	1993
Aurora	Constant	Corona
Daily	Docs	Images
Incoming	Indices	lono
Scan	Software	Weekly
Xrays	pub	

Capital letters are significant; e.g., different from small letters.

Let's assume that you want to sample some of the files in the Weekly subdirectory. You then change directory over to Weekly with:

cd Weekly

Upon doing a dir
you find a bunch of files with suffix .stf; e.g.,
93-08-27.stf
93-09-03.stf
etc.

These are ASCII (text) files, to retrieve them, you type:

get 93-08-27.stf
93-08-27.stf
to local file
for instance. If you wanted to get multiple files you could use wildcards with the mget statement; e.g.
mget 93-09*.*
and press y or n as the program presents each file, telling you how long it was and how fast it was received.

OK, you decide that *.stf wasn't your kind of stuff. Let's get back to that directory that started with 1991. You do that by backtracking one directory level. Type:
cd ..

Before going further, I'd better explain that while many files, such as .stf and .dly, are ASCII; many others are combined and compressed. For instance, the subdirectories 1991, 1992, & 1993 have files with one month's iono (ionosphere) and sgdb (solar-geophysical data base) data compressed with tar, zoo, and pzip. Files with suffixes like tar.Z, .zoo, and .zip must be transferred as binary files. To switch to binary mode, just type:

binary

or alternatively, ascii, to get back.

Ionogram scalings are in the lono subdirectory, I believe. The Daily subdirectory contains ASCII files with the suffix .dly of solar-geophysical data. It also contained a binary file all.zoo which had all the .dly files combined. Use the program ZOO.EXE to unpack these. To do this, you would type:

cd Daily
get all.zoo

When you are finished you logout of the remote computer with the command:

bye

You may or may not have to quit the ftp program on your computer. If you get the prompt FTP>, type:

quit

Sporadic-E over Asia During August 1993

Jon K. Jones M.D., NO0Y, gave a paper to the 1993 Central States VHF Conference titled "Multi-hop 50 MHz Sporadic E Transpacific Propagation" in which he estimated the probability and time of occurrence for multi-hop Sporadic-E openings over the Pacific path. He wrote, "G3NAQ has shown that the occurrence of Es at two points of reflection is highly correlated, implying that the conditions for producing Es on a certain day act over a considerable area. The short term probability of Es at two locations is uncorrelated and the daily occurrence is highly correlated." The correlation factor between single hop and double hop Es is about 75% along isobar foEs lines. That is, on a given day that a single hop opening occurs, 75% of these openings may have double hop propagation present." He then goes on to account for solar time differences along a path, such as U.S. to Japan.

The concept intrigued me. Sporadic-E may have a number of causes; wind shear, meteors, thunderstorms, auroral particle precipitation, shock waves, and solar radiation, each of which may be uncorrelated. How many of these causes would be global in nature?

We have some data from Solar Terrestrial Dispatch that we'd like to share with you and let you decide for yourself how correlated Es is over one part of our planet. The only stations that send Es scalings to STD are in the former USSR. They are (in order of decreasing latitude):

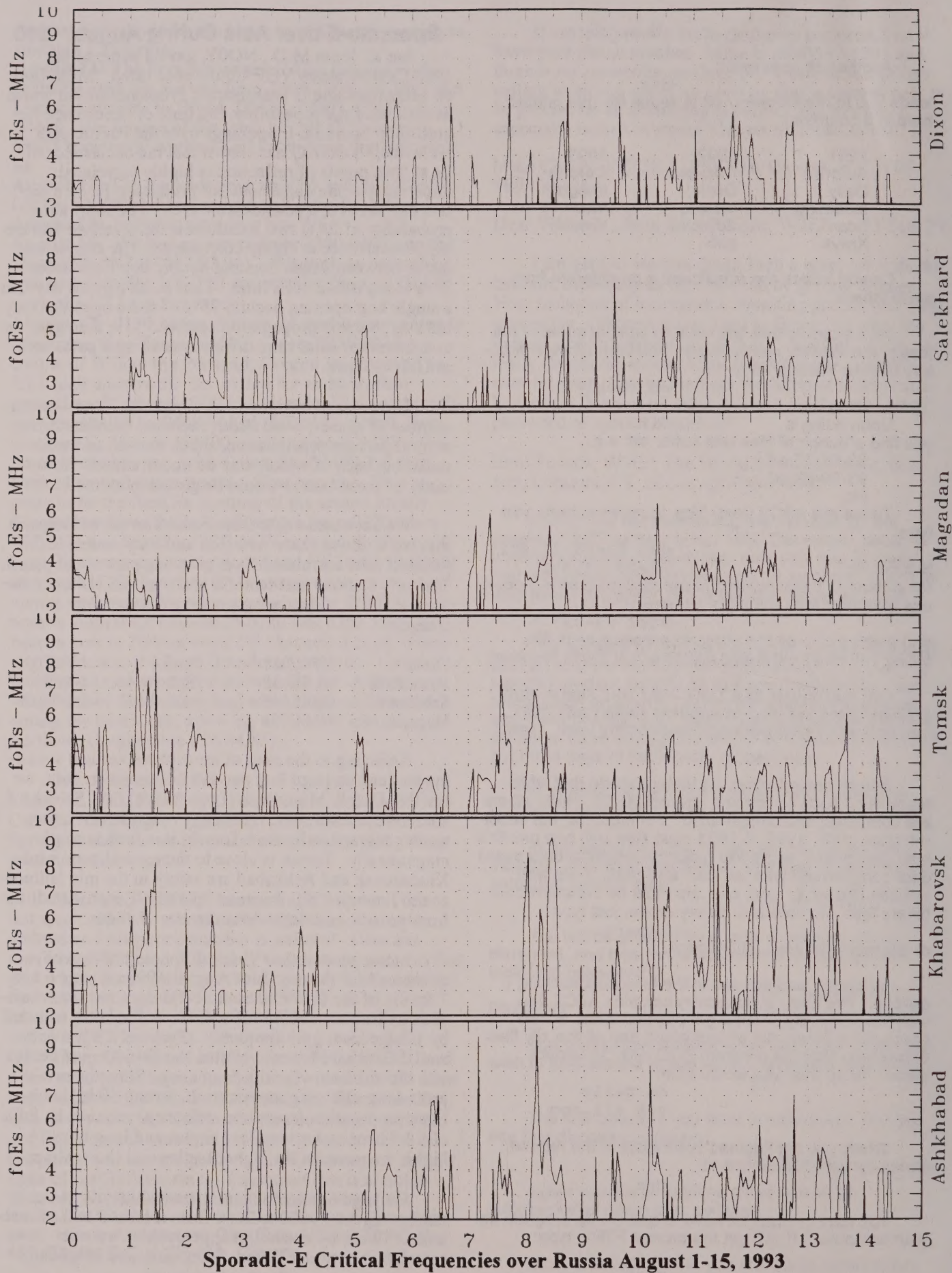
Dixon	N74E081	Tomsk	N56E085
Murmansk	N68E033	Khabarovsk	N48E135
Salekhard	N66E066	Ashkabad	N37E058
Magadan	N60E151		

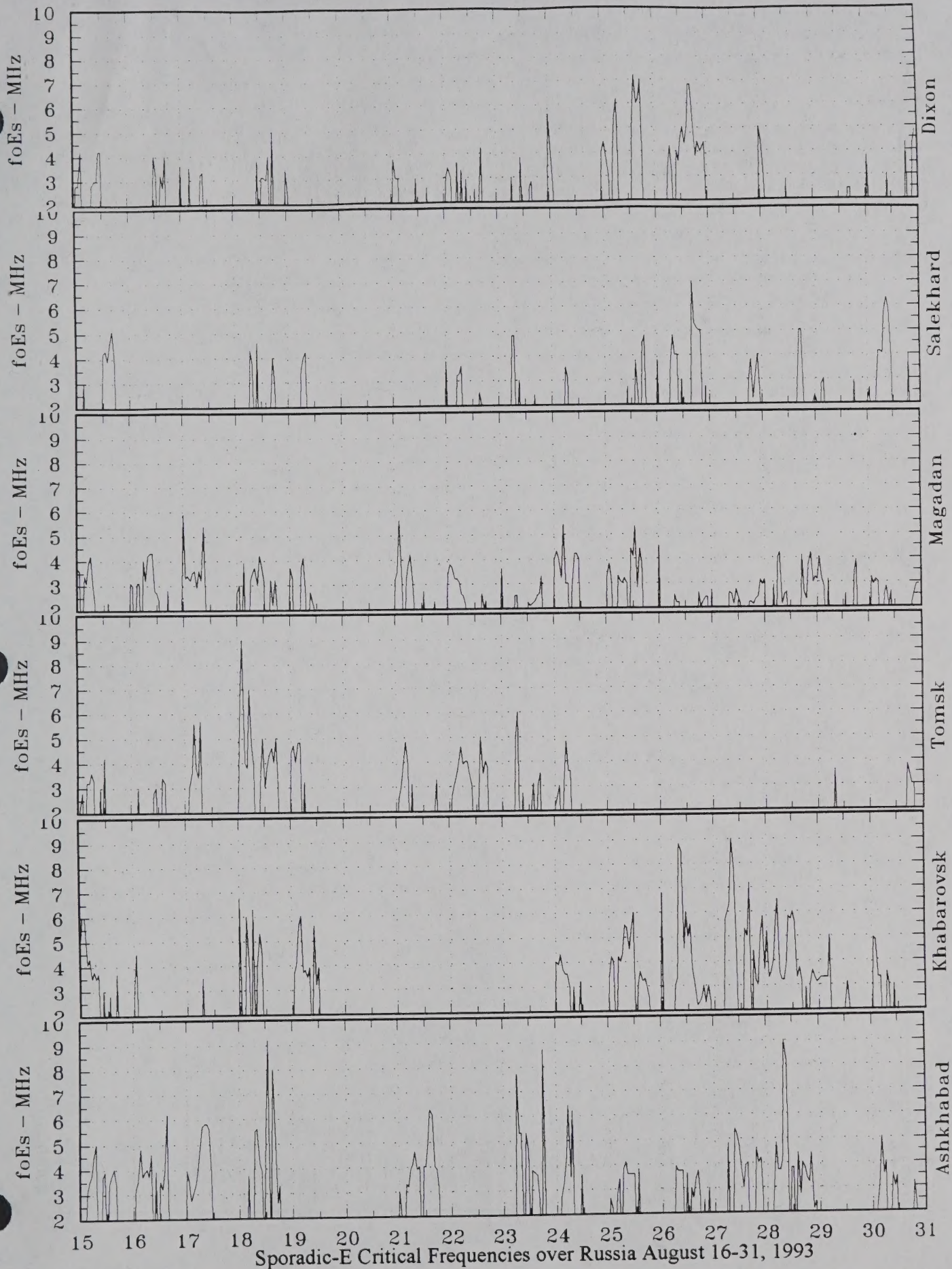
Referring to the map of ionosphere vertical sounding stations on page 7 of our 1992 November issue, we see that Dixon, Murmansk (Loparskaya), and Salekhard are in the auroral zone. Although Magadan is further north geographically than Tomsk, it is further south magnetically. Tomsk is close to the auroral zone while Khabarovsk and Ashkabad are safely in the mid latitude zone. I mention this because Sporadic-E statistics differ from polar to mid latitude to equatorial zones.

I have plotted the "Critical Sporadic E-layer Frequencies" for the month of August 1993 on page 6 and 7 for six of the above stations. STD does not say whether these frequencies are foEs, fxEs, or the latter adjusted by 1/2 the local gyro frequency. Perhaps it's just as well, fEs is hard to scale. Often the Es trace just decays into the noise slowly with frequency. Sometimes it's just a long-enduring meteor trail. Strong 50 MHz oblique propagation (complete reflection) requires an foEs of 8 MHz or so for very low angles and long hops, higher frequencies for higher angles and shorter hops.

On page 6, the abscissa starts with day 0. Actually this is August 1 0000 to 2400 from x label 0 to 1. Correlation? Well, by eyeball, it appears there's some correlation between Dixon, Salekhard, and Magadan,

(Continued on page 8)





(Continued from page 5)

and some correlation between Ashkhabad, Khabarovsk, and Tomsk. There's some notable uncorrelation as well.

Of more concern to me is the low observance of Es criticals > 8 MHz. One reason for this may be sampling. The ionosonde record scaled probably sampled a couple minutes out of each hour. The sounding station probably sampled an area less than 500 square km. The area between these stations is roughly 2.8×10^7 square km. That's about 56,000 times as much area not sampled as sampled.

Then, six meter radio amateurs don't require a copper sheet reflector of Fresnel zone size to make contact. Partial reflection and/or a properly-aligned meteor trail perhaps 100 meters in diameter and 1 km long will do just fine.

I believe that correlation between fEs at widely-spaced ionosondes will be greater during coming months when ordinary mid latitude Sporadic-E is at a minimum and the Es that does occur can be traced to meteor showers, emissions from solar flares and coronal holes, and the shock wave accompanying the arrival of solar particles; solar-geophysical phenomena which may affect large parts of the globe at the simultaneously.

Winter 92-93 50 MHz DX Reports

December 1992

Erik Roy, TI2NA, reports that he had over three hours of openings to VK and ZL, but was able to raise only 25 stations, some on 50.110 and some on 51.110. He comments, "I was blue from calling, but activity is down."

January 1993

Louis, HL9UH passes along the following log:

Time	Station	Freq/Mode	His/myRST	Name, QTH & other data
0741	VK4APG	50110 A3j .1	4-3/5-9	5-9 Peter
0748	VK4WTN	50116 A3j .1	5-5	5-9 Wayne, nr Brisbane
0753	VK4GMH	"	5-7	5-9 Graham
0755	VK4KU	"	5-5/7	5-9 Bert QG61
0803	VK4IAM	50116 A1 .1	559	599 Alan QG64
0806	VK2GLS	"	"	"
0810	VK2VC	50116 A3j .1	5-4/5	5-7/9 Vince

February 1993

February 5 4/2 Flux=145 A=6 K=1

0425+	VK4 S5/9	noted in on 50 MHz		
0430	VK4FAR	5011/122 A3j .15-8/9	5-9 Ron	QG64
0437	VK4KJL	50122 A3j .1	5-9both	John
0439	VK4DDC	"	"	Brian
0446	VK4WTN	"	5-7	5-9 Wayne
0502	VK4ALM	"	5-9both	Lyn, Rockhampton
0523	VK4BRG	50110 A3j .1	5-4	5-9 Ron
0533	VK4NL	50122	5-4	5-6/7 Noel
0610	VK4ABW	50110	5-4	5-9 Gary
0616	VK2GLS	50110 A1 .1	559	579 Sydney
0630	45.24, .25 & .26	all in S1-3	to past 0715	
0635	VK2VC	50110 A3j .1	5-5/9	5-9 Vince
0639	VK2BA	"	5-5	5-7 David
0700	ZL4AAA	50110 A1 .1	42/49	529 Bob (QSB after 0706+)
0704	VK1RX	"	559	559 Peter QF44

February 7 6/2 Flux=184 A=2 K=3 Maj Flare 06181?

0628	45.24 S7, .25 S4, 2+ sigs	.26 S4, 46.25 S4, .24 S9		
0640	ZL3AAU	50110 A3j .1	5-3/4	5-8 John (lotsa QSB) RE66
0644	ZL3TIC	"	5-3/4	5-8/9 Mike, Chrstch RE66
0645	ZL2UCG (3)	"	5-4	5-5 Owen RE79
0646	ZL2KT	"	5-5both	" RF80
0648	VK4ZAZ	"	5-5	5-7 Lance QG62
0649	VK4GFS (GPS?)	"	5-4	5-7
0651	VK4PU	"	5-7	5-9
0651	VK4AFL	"	5-7	5-9
0652	ZL3ADT	"	5-3	5-6 Ross, Chrstch RE66
0654	VK4KK	"	5-8	5-9
0655	VK4KU	"	5-7both	"
0655	VK4IT	"	5-5	5-9 Bob, Brisbane QG62
0658	VK4MZ	"	5-7	5-9 Kerry
0659	VK4WH_?	"	5-3	5-5

0700	ZL TV .26 S1, .25 S3/4, .24 S3, QRN S3,			
	46.24 S4/5, .25 S4/5			
0715	45.24 S4, .25 S4/6, .26 S0, QRN S3, 46.25 S0, .24 S1/2			
0730	45.24 S3/4, others nil, no copy 10m VK bcns			
0745	nil on 45 & 46; VK4 & VK8 10m bcns in S2/3			
February 9	8/2 Flux=188 A=29 K=24			
0820	45.25 S2/3, QRN S3			
2252	VK8 bcns now in S2 - not normally in this time frame of late			
February 12	11/2 Flux=173 A=14 K=2			
0813	VK4UTT	50110 A3j .1	5-5/6	5-7
0820	VKTU 46.25 S6/7, QRN S3/4			
0850	VK4IAM	50110 A3j .1	5-6/7	5-9 Alan
0858	VK4ALM	50116	5-7both	Lyn
February 13	12/2 Flux=149 A=11 K=3			
0448	VK4 & 46.25 S2/3 in//0530 46.24 S1, .25 S1/2, .26 S2; No ZL TV			
0500	VK4EJR	50110 A3j .1	5-5both	Bd (ex-VK4KAA) QG26
0547	45.24 S0, 46.24 S1, .25 S1//0608 VK4s in good, 46.25 S7/9, 45.25 S0			
0738	No VK or ZL TV now, 48.25 weak, watery sigs de SSW?			
February 15	14/2 Flux=141 A=5 K=0			
0530	46.25 S7, VK4s in//0536 45.25 S0/1, 46.25 S4/6			
0537	VK4GMH	50116 A3j .1	5-5both	Graham
February 16	15/2 Flux=135 A=1 K=1			
0740	48.25 (2 sigs) S3+ de SE, S5/6 de S, S3/6 de SSW			
February 18				
1128	VK4TL S9 (QH22) on 50.145; 45.25 S0 w/ echo, 46.24 S2/3, .25 S1 w/ TV QRM			
1133	VK4TL	50145 A3j .1	5-9both	John QH22
1200	DX1 S1/2//1225 DX1 S3/5 @ S; P29 bcn S0 & VK8 bcn			
1203	VK3OT	50110 A1 .1	599both	Steve, Victoria QF02
1206	VK3OT	50116 A3j .1	5-9both	Steve QF02
1215	KC6RR	"	5-7/8	5-9 Charlie
1235	VK6JQ	50102 A1 .1	229	529
1245	VK7ZIF	50104 A3j .1	3-3	5-9
1251	VK3AZY	"	4-3/5-5	5-7 Jim QG22
1255	VK3DUJ	50104 A3j .1	5-7	5-9 Norm
1257	VK3BQS	"	4-3	5-9 QF31
February 20	19/2 Flux=116 A=7 K=3			
0145	JA6 & JA7 bcns de SE			
0148	JE7RJZ	50110 A1 .1	429	579 Nao, Iwate
0151	JH1ECU	"	559both	"
0152	JA1VOK	"	559	579 Hat, Chiba QM05
0154	JH0MHE	"	559both	Hiro, Nagano PM96
0156	JG1IEU	"	559	599
0159	JF2UED	"	559both	"
0204	JA9LSZ	50102/104 A1	429	559
0207	JR6HI	"	429	559 Kenji PL36
0212	J14HUX	50102 A1 .1	429	559
0214	JR4ALK	"	429	539
0647	45.25 S0, .26 S0, 46.24 S1, .26 S0/1, .25 S3/5 w/ TV2 QRM			
0725	VK4FAR	50110 A1 .1	57/99	599 Ron
0728	VK4ZAL	50110 A3j .1	5-5	5-7
0729	VK4ZAZ	"	5-5	5-6 Lance
0730	VK4GMH	"	5-7/9	5-9 Graham
0731	VK4DDC	"	"	"
0732	VK4AR	"	5-5/7	5-9 Jerry, Brisbane
0734	VK2ZOO	"	4-2	5-5
0735	VK4IAM	"	5-7	5-9
0736	VK4TN	50120 A3j .1	5-7	5-9 Austin
1043	P29 bcn S1/2			
1044	P29CW	50113 A3j .1	5-5/7	5-9
1100	P29PL	50119 A3j .1	"	Paul
February 21	20/2 Flux=123 A=22 K=1			
0220	JA7 S0, VK4s S5, VK2s S0, JA5 S0			
0231	JF1CZQ	50114 A1 .1	529	559 Tom QM05
0234	JA1AUD	"	"	Kaji, Yokosuka PM95
0235	JA9IPF	"	559both	"
0235	JA7WSZ	"	539	559
0236	JA1RFF	"	539	539
0237	VK4AR	"	559	599
0238	JA7EVP	"	429	559
0239	J11DLZ	"	539	559
0240	JA9BHZ	"	549	559 Shige, Ishikawa PM86
0241	JF3QUR	"	559	579
0241	JG3TXD	"	539	559
0242	VK4JH	"	599both	"
0243	JA1UIU	"	539	559
0244	JR1RCQ	"	539	559
0245	JA9QJD	"	429	559
0247	VK4ABW	50115 A1 .1	599both	"
0248	JH1WHS	"	429	559 Yutaka, Saitama PM96
0306	DX1 S1/2//0315 XU1 weakly (actual 429) QSOing JAs/ XU0UN? on .130 OK21 wk & out			
0317	XU5DX	50115 A1 .1	599both	(via F6PNU) OK10
21 February, 1993				
0630	VK4WTN in S3/4, 46.25 S1/2, .24 S5, .26 S0; 45.25 vry wk S0; 48.25 S3/4			
0715	45.25 S0, 46.25 S3/4, .24 S3/5, 48.25 S5/7;			
0806	46.24 S1/3, 48.25 S2/5//0955 46.24 S1/2, 48.25 S1/2			
25 February, 1993	24/2 Flux=136 A=4 K=2			
1115	VK8 6m bcn S1//1315 still in S1/2			
1130	VK4ABW	50110 A3j .1	5-3	5-9 Gary
1204	JN6NWO	145020 F3 .15	5-9both	Shigemi, Tsushima